SPRING 2026 UNDERGRADUATE RESEARCH SYMPOSIUM AWARDEES

Most Popular Project

Fingerprinting the Invisible Hand of the State in China's ETF Market

Presenter: Xingyu Shi, Dong Zhang, Hongyi Zhang, Shuyuan Zhang

Project Subject: Other/Interdisciplinary: Finance

Faculty Mentor: Xin Zhou

Understanding “National Team” intervention is critical for analyzing liquidity provision and market stabilization in China’s capital market. Existing studies rely on low-frequency stock-holding disclosures, limiting daily timing analysis. We propose a daily identification framework using ETF pairs that share comparable underlying scope but differ in observable state-backed holding intensity. By constructing rolling-standardized relative factors across secondary-market and primary-market channels and fusing them into a unified daily intervention index, we align same-day trading signals with T+2 primary-market signals. The resulting index matches major policy windows and predicts delayed volatility stabilization, providing an implementable tool for studying policy-driven market dynamics.

SOCIAL SCIENCE

Best Research Project

Mapping Democratic Backsliding

Presenter: Victoria Liao

Project Subject: Other/Interdisciplinary

Faculty Mentor: Zhaonan Wang, Ivan Rasmussen

The term “democratic backsliding” is used to describe the phenomenon of a democracy becoming increasingly undemocratic. Previous scholarship relies largely on indicator data, but the Democratic Erosion Event Dataset (DEED) empowers novel, text-based approaches. This project uses DEED and Natural Language Processing (NLP) methods to mine a typology of backsliding events grounded in Margolis’ five concepts of political instability, and train an existing hierarchical text classification model (TELEClass). Further, this project’s findings and case studies suggest that conditions for and manifestations of democratic erosion may be different in democratic regimes than authoritarian regimes.

SOCIAL SCIENCE

Best Presentation

Gestalt Chunking and How Radical Organization Shapes Learning and Recognition of Chinese Characters

Presenter: Mya Hasbun

Project Subject: Social Science

Faculty Mentor: Kehui Zhang

Chinese characters are visually complex and highly structured with strokes that are grouped into radicals and radicals that are then constrained within spatial templates. Xu Bing, a widely recognized conceptual artist created over 100,000 characters. Using a two-phase experimental design, I examine how Gestalt organizational principles influence both the learning of novel characters and the perception of orthographic legitimacy. Participants will learn a judgment task involving real and pseudo characters. I hypothesize that Gestalt-consistent organization inclines people to use perceptual chunking, while pseudo-legal forms generate processing delays due to structural familiarity. Native Chinese speakers This research highlights the role of visual organization in shaping reading processes and challenges assumptions about how meaning emerges from written form.

MIND, BRAIN & SOCIETY

Best Research Project

Neural Dynamics and Representations of Imagined Speech

Presenter: Yiyue (Yolanda) Huang

Project Subject: Neural Science

Faculty Mentor: Adeen Flinker, Xing Tian

Current speech neuroprostheses rely heavily on decoding neural representations during overt or attempted speech, which may be impaired in severely paralyzed patients. On the other hand, imagined speech deploys non-motor signals but remains understudied. We applied machine learning approaches to analyze electrocorticography data, investigating what brain areas and neural features are active during imagined speech. We identified pre-articulatory and articulatory activities in the inferior frontal, precentral, and postcentral gyri. Encoding models revealed comparable acoustic, phonemic, and articulatory representations across these regions. Our findings highlight the potential of non-motor cortical signals to advance speech neuroprostheses for individuals with severe paralysis.

MIND, BRAIN & SOCIETY

Best Presentation

Degrees of Inequality: Heat Exposure and Vulnerability in Rio's Public Schools

Presenter: Gabriel Fernandes Mello Ferreira

Project Subject: Social Science

Faculty Mentor: Kangning Huang

In Rio de Janeiro, public schools are especially vulnerable to extreme heat waves due to inadequate or absent cooling infrastructure and poor building conditions. Combining a literature review on the impacts of heat on students' cognitive performance with survey data of faculty perceptions, this research analyzes how elevated temperatures affect learning conditions in public schools. By identifying patterns of thermal inequality and examining perceived educational impacts, this study contributes to discussions on climate vulnerability, educational equity, and urban adaptation policy in Brazil.

LIFE SCIENCES

Best Research Project

Maintenance of Genome Stability by PTIP Implicates Dual Roles in Cancer Development

Presenter: Ariana Arwen Fahl, Edwin Jiang, Flora Shin

Project Subject: Biology

Faculty Mentor: Jungseog Kang

Studies suggest that PTIP functions in double-strand DNA break (DSB) repair and interacts with centromeric MPS1 kinase. Therefore, we want to study whether PTIP plays a role in centromeric DSB repair which is often dysregulated in cancer. We first demonstrate that inactivation of PTIP in HeLa cells increased sensitivity to DNA-damaging agents and changed the dynamic level of γH2AX, a molecular marker of DSB, in a site-specific manner. The critical region of PTIP for DSB repair resides in the middle BRCT domains. Together, these findings suggest that PTIP plays a critical role in DSB repair at centromeres.

LIFE SCIENCES

Best Presentation

MCRS1 Loss Suppresses Cell Proliferation Independently of the p53 Axis While Inducing Chromosomal Instability

Presenter: Eric Kuang, Emily Ning Zhuang

Project Subject: Biology

Faculty Mentor: Jungseog Kang

Colorectal cancer (CRC) is a leading causes of cancer mortality. Little research exists on chromosome instability (CIN), a hallmark of cancer, in CRC. Here, we introduced major cancer gene mutations of CRC such as kRAS, p53, or Microspherule Protein 1(MCRS1), in normal or cancer colon cells and studied how MCRS1 loss impacts cell proliferation rate and CIN. Our studies discovered that with MCRS1 loss, CIN dramatically increases, and cell proliferation is altered in a P53-independent manner.